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(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

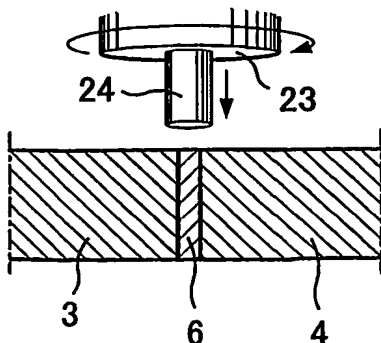
(84) 指定国 (広域): ヨーロッパ特許 (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).

添付公開書類:  
— 国際調査報告書

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(54) Title: METHOD FOR JOINING ALUMINUM POWDER ALLOY

(54) 発明の名称: アルミニウム粉末合金の接合方法



(57) Abstract: A method for joining aluminum powder alloy articles which comprises pressurizing and sintering an aluminum alloy powder prepared through the rapid solidification method to form a sintered article, and then joining the resultant articles by using the friction agitation joining method; the method which comprises using a composite sintered article containing ceramic particles dispersed therein; and the method comprising carrying out the friction agitation joining with a joining auxiliary containing ceramic particles of similar material to that of articles to be joined which is sandwiched between or placed on the articles. The method allows the articles to be joined without melting, that is, without the occurrence of blowholes or the roughening of their structure, which results in the achievement of joining with the retention of characteristics inherent in the original aluminum powder alloy.

(57) 要約: 急冷凝固法で得たアルミニウム合金粉末の加圧焼結体を摩擦撹拌接合法により接合する。加圧焼結体としては、セラミックス粒子を分散させた複合焼結体でもよい。被接合部材間あるいは被接

合部上に接合する部材と同種のセラミックス粒子を含有する接合補助材を扶持または載置した状態で摩擦撹拌接合してもよい。接合部は溶融されることなく接合されるので、ブローホールの発生や組織が粗大化することがなく、アルミニウム粉末合金の本来の特性を維持したまま接合される。

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/14414

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> B23K20/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
Int.Cl<sup>7</sup> B23K20/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Toroku Jitsuyo Shinan Koho	1994-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-47261 A (Sumitomo Light Metal Industries, Ltd.), 20 February, 2001 (20.02.01), Claims; detailed explanation of the invention; Par. Nos. [0019] to [0031]; Figs. 1 to 5 (Family: none)	1-8
P, A	JP 2002-346770 A (Hitachi, Ltd.), 04 December, 2002 (04.12.02), Full text; all drawings (Family: none)	1-8

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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Authorized officer

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/14414

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, A	JP 2003-149382 A (Mitsubishi Heavy Industries, Ltd.), 21 May, 2003 (21.05.03), Detailed explanation of the invention; Par. Nos. [0007], [0013], [0049], [0065]; Figs. 1 to 5 (Family: none)	1-8